

GULFCO WORKPLAN OUTLINE

1. Include a Quality Control Project Plan (QAPP) in accordance with EPA guidance. Include sampling procedures, sample custody, analytical procedures, data reduction, data validation, data reporting, and personnel qualifications. Also include maximum sample holding times and type and amount of preservatives.
2. Provide a demonstration that each analytical laboratory that may be used is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern in the media of interest within detection and quantification limits consistent with both QA/QC procedures and the DQOs presented in the QAPP. The laboratory should have, and follow, an approved QA program. If a laboratory not in the Contract Laboratory Program (CLP) program is selected, a laboratory QA program should be included in the WP.
3. Characterize geology and hydrogeology to the drinking water aquifer at the Site.
4. Include provisions for gathering all data necessary for calculations of contaminant fate and transport.
5. Describe the decontamination procedures.
6. List the analytes for all methods. For EPA methods SW-846 8260, 8270, 6010, 7470, 7471, 8081, and 8082 the analyte list should include all analytes covered by each method. Alternative analysis methods may be required to achieve the necessary detection limits.
7. Activities in accordance with EPA guidance to facilitate delisting process.
8. Measure in-situ permeability of cap at former impoundments to evaluate potential for vapor migration through cap, in addition to Atterburg Limits and 200 sieve.
9. **Analytical Methods:**
 1. Surface water and ground water: Analytical methods with detection limits for all analytes as specified in the Ecological Benchmarks for Water, Table 3-2: *"Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas"*; December 2001; RG-263 (revised), including any updates.
 2. Sediment: Analytical methods with detection limits for all analytes as specified in the Ecological Benchmarks for Sediment, Table 3-3: *"Guidance for Conducting Ecological Risk Assessments at Remediation Sites in Texas"*, including any updates.
 3. Soil north of Marlin Ave.: Analytical methods with detection limits for all analytes as specified in the EPA Ecological Soil Screening Levels; or Ecological Benchmarks for Soil, Table 3-4: *"Guidance for Conducting Ecological Risk*

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Assessments at Remediation Sites in Texas”, including any updates, for analytes not included in EPA’s Ecological Soil Screening Levels.

4. Soil south of Marlin Ave.: EPA Region 6 Soil Screening Levels for commercial/industrial human health exposure.
10. **Soil Samples:** (maximum 200 ft. grid spacing north of Marlin Ave; maximum 100 ft grid spacing south of Marlin Ave; and 20 biased samples)
 1. Samples should be collected from one randomly selected location within each grid block.
 2. Sample @ 0" - 6", for semi-volatiles, pesticides, PCBs, and metals analysis.
 3. Sample @ 12" - 24", for volatiles, semi-volatiles, pesticides, PCBs, and metals analysis.
 4. No compositing of samples should be done.
 5. Background soil samples: 6 samples from each of two locations, NE and NW of Site as shown in Figure 4 of the “HRS Documentation Record”, dated February 2002. Collect background using same methods as Site soil samples.
 6. Soil samples for VOC analysis should be collected with Method 5035 (which may include “Encore” samplers).
 7. Soil samples from the vacant lot area southwest of the Gulfco property. This area should be divided into grids with maximum grid block dimensions of 100 feet by 100 feet. Samples should be collected from one randomly selected location within each grid block. The samples should be collected from a depth of 0" to 1" bgs with sample analysis for SVOCs, pesticides, PCBs, and metals.
 8. Three representative soil samples collected from the Site north of Marlin Avenue, and three representative soil samples collected from the Site south of Marlin Avenue, should be analyzed for bulk density, porosity and pH.
 9. Should a grid location at the perimeter of the Site exceed the screening criteria, then a minimum of two additional grids with maximum dimensions of 200 feet should be created outside of the exceeding grid, and these new grid areas should be sampled at one random location within each grid and analyzed in the same fashion as the soil samples in this task.
11. **Ground Water Samples:**
 1. Maximum 200 ft grid spacing;
 2. Samples should be collected from one randomly selected location within each grid block.
 3. Perform shallow sampling in area of impoundments to define potential DNAPL area; then perform deeper sampling as necessary to define vertical extent outside of any DNAPL area to avoid dragging down DNAPL.
 4. The samples should be collected within the upper ten feet of the uppermost aquifer. The sample analysis should include VOCs, SVOCs, pesticides, PCBs,

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metals, and TPH.

5. These ground water samples may be collected using direct push technology.
6. An additional 8 soil borings (in addition to the 7 borings for the monitoring wells) should be drilled 75 to 100 feet outside of the edge of the former impoundments. Additional borings should be drilled as necessary to define the vertical and horizontal extent of any DNAPL zones. Direct push technology may be used as an alternative to borings for defining the DNAPL zones.
7. Should any ground water sample location at the perimeter of the Site exceed the screening criteria, then a minimum of two additional ground water samples should be collected outside of the location exceeding the screening levels in the same water bearing zone. These additional ground water samples should be collected and analyzed in the same fashion as the ground water samples in this task. In addition, a minimum of three locations should be sampled for ground water from the water bearing zone located immediately below the water bearing zone that exceeded the screening levels, unless this sampling would result in the penetration of a DNAPL zone. In that case, the DNAPL zone should be defined, and the deeper samples collected outside of the DNAPL zone. This collection of additional samples should be repeated, both vertically and horizontally, until the extent of ground water contamination has been determined.

12. Surface Water Samples:

1. Wetlands north of Site: 15 samples
2. Fresh Water Ponds in Lot 55: 6 samples (3 samples in each pond)
3. Analyze samples for VOCs, SVOCs, pesticides, PCBs, and metals.
4. Metals analysis on both filtered and unfiltered samples.
5. Measure hardness and pH on all surface water samples.

13. Sediment Samples:

1. Wetlands north of Site: 15 locations; at each location, one sample at surface of sediment (0" to 6"), and one sample at 12" to 24" (30 sediment samples total). The location of the sediment samples should be biased based on the drainage pathways from the Site.
2. Barge slips and Intracoastal Waterway: 16 locations - at each location, one sample at surface of sediment, and one sample at 12" to 24" (32 sediment samples total).
 1. 5 locations in Barge Slip No. 1;
 2. 5 locations in Barge Slip No. 2; and
 3. 6 locations in the Intracoastal Canal next to the Site.
3. Fresh Water Ponds in Lot 55: 8 sediment sample locations (5 locations in the large pond and 3 in the small pond). At each sampling location, sediment samples should be collected from two depths as above (16 sediment samples

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- total).
4. Analyze sediment samples for VOCs, SVOCs, pesticides, PCBs, metals, and TPH.
 5. Grain size and total organic carbon (TOC) should be measured on all sediment samples.
 6. Should any sediment sample location at the perimeter of the sampled wetland area exceed the screening criteria, then a minimum of two additional sediment samples should be collected within 200 feet of the location exceeding the screening levels. This collection of additional sediment samples should be repeated until the extent of sediment contamination has been determined.

14. Sediment Toxicity:

1. Sediment toxicity samples should be collected if the sediment chemical analytical data exceeds the TCEQ Ecological Benchmarks for Sediment, Table 3-3; or if any contaminants that are considered bioaccumulative are detected in any sample. The 95% UCL should be used for comparison of the chemical analytical data to the ecological benchmarks. A 95% UCL should be calculated for the chemical analytical data from the wetland areas, and a separate 95% UCL should be calculated for the Intracoastal Canal (including the Barge Slips).
2. If sediment toxicity samples are required in the Intracoastal Canal as described above, then sediment toxicity tests should be run at a total of 10 locations as follows:
 1. 3 in Barge Slip 1
 2. 3 in Barge Slip 2
 3. 2 in the Intracoastal Canal adjacent to the Site
 4. 2 background locations in the Intracoastal Waterway - 1 location northeast of the Site and the other southwest of the Site.
3. If sediment toxicity samples are required in the wetland areas as described above, then sediment toxicity tests should be run at a total of 6 locations as follows:
 1. 4 locations in the wetlands adjacent to the Site
 2. 1 location in the wetlands 500 feet northwest from the Site, and
 3. 1 location in the wetlands 1000 feet northwest from the Site.
4. The location of the sediment toxicity test samples in the wetlands should be biased based on the drainage pathways from the Site.

15. Terrestrial Soil Toxicity

1. Terrestrial soil toxicity samples should be collected if the soil chemical analytical data from samples north of Marlin Ave. exceeds the TCEQ Ecological Benchmarks for Soil, Table 3-4; or if any contaminants that are considered bioaccumulative are detected in any sample. The 95% UCL should be used for comparison of the chemical analytical data to the ecological benchmarks.

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2. If terrestrial soil toxicity samples are required as described above, then 10 terrestrial toxicity tests should be run at locations to cover the Site area north of Marlin Ave.

16. **Fish/Crab Samples (Human Health):**

1. Intracoastal Canal adjacent to Site: 6 samples (filets) from each of 3 edible fish species (9 total), 6 crab samples from one crab species, fish and crab to be larger than legal possession size.
2. Background: 3 fish samples (filet) from each of 3 fish species (9 total), 3 crab samples from one crab species, fish and crab to be larger than legal possession size. Background samples collected from 0.75 miles NE of Site.
3. Analyze for SVOCs, pesticides, PCBs, and metals (no VOC analysis).

17. **Sediment Biological Tissue Testing (Ecological):**

1. Biological tissue samples should be collected if the sediment chemical analytical data exceeds the TCEQ Ecological Benchmarks for Sediment, Table 3-3; or if any contaminants that are considered bioaccumulative are detected in any sample. The 95% UCL should be used for comparison of the chemical analytical data to the ecological benchmarks. A 95% UCL should be calculated for the chemical analytical data from the wetland areas, and a separate 95% UCL should be calculated for the Intracoastal Canal (including the Barge Slips).
- 4.2. If biological tissue samples are required in the Intracoastal Canal as described above, then collect 4 composite foraging fish ("fundulus") samples - 2 from each barge slip, and perform whole body analysis.
- 2.3. If biological tissue samples are required in the wetland areas as described above, then collect 10 composite samples of fiddler crabs located in the wetlands northwest of the Site;
- 3.4. Biological tissue samples should be analyzed for SVOCs, pesticides, PCBs, and metals.

18. **Soil Biological Tissue Testing (Ecological):**

1. Biological tissue samples should be collected if the soil chemical analytical data from the site area north of Marlin Ave. exceeds the TCEQ Ecological Benchmarks for Soil, Table 3-4; or if any contaminants that are considered bioaccumulative are detected in any sample. The 95% UCL should be used for comparison of the chemical analytical data to the ecological benchmarks.
- 4.2. If soil biological tissue samples are required as described above, then 6 biological tissue tests should be run at locations to cover the Site area north of Marlin Ave.
- 2.3. The tissue samples should include small mammals (including both herbivorous and omnivorous species) and terrestrial plant tissue. For the terrestrial plant

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tissue, tissue tests should be run on the plant roots and the above ground plant tissue separately. In addition, the plant tissue tests should be run on both washed and unwashed tissue samples.

19. **Notes:**

1. Number of samples is based on environmental sampling only. Additional samples will be required for the QA/QC requirements (i.e., field blanks, trip blanks, duplicates, MS/MSD, etc.).
2. The Respondents should provide for a lab audit of the laboratory(s) to be used unless the lab is NELAC certified.
3. The purpose should be to evaluate the lateral and *vertical* extent of potential DNAPL and COCs in groundwater.
4. Number of samples is for the initial sampling phase. Additional sampling may be required if initial sampling is not sufficient to define horizontal and vertical extent of contamination, or to better define “hot spots”, or to fill in any data gaps.
5. Vertical/horizontal extent based on following benchmarks:
 1. Soil:
 1. North of Marlin Ave.: EPA Ecological Soil Screening Levels; or, in not available, then TCEQ Ecological Benchmarks for Soil, Table 3-4.
 2. South of Marlin Ave.: EPA Region 6 Soil Screening Levels for commercial/industrial human health exposure.
 3. No deeper than the water table.
 2. Ground Water: TCEQ Ecological Benchmarks for Water, Table 3-2; ground water PRGs based on ecological receptors because of potential for migration to surface water.
 3. Sediment: TCEQ Ecological Benchmarks for Sediment, Table 3-3.
 4. Surface Water: TCEQ Water Quality Standards, or, if not available, then Ecological Benchmarks for Water, Table 3-2.
6. To evaluate groundwater flow rate and direction Site, in addition to using water level data to construct potentiometric surface maps for the Site, a staff gauge should be placed in the surface water in the wetlands to the northwest of the Site in addition to one installed at the Intracoastal Waterway shoreline (to allow comparison of groundwater elevations to surface water levels).
7. Table 1 - *Sample Analysis Summary*, does not provide for sufficient quality control samples. The quality control sampling frequency shown in the table below should be used.

Media	Field Duplicate	Equipment Rinsate Blank	Trip Blank	Field Blank	Matrix Spike/Matrix Spike Duplicate	Proficiency Test Sample (NITCI Standard or
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						equivalent)
Aqueous	1 in 20	1 in 20 or one per day	One per sample shipment (VOCs only)	One per day	1 in 20	One per shipment
Soil & Sediment	1 in 20	1 in 20 or one per day	Not required	Not required	1 in 20	One per shipment
Tissue	Not required	1 in 20 or one per day	Not required	Not required	Not required	Not required

8. The Remedial Action Plan (RAP) should be provided to the community for review and comment (not only if requested). A responsiveness summary should be provided for the public comments.
9. There should be monthly mailings of fact sheets, not only one. Each fact sheet should be submitted for regulatory review and approval.
10. The community should be kept informed through public/community meetings. The meetings should be held, at a minimum, before the investigation starts, at the completion of the investigation, for the proposed cleanup plan, and following completion of the cleanup.
11. The Respondents should make sufficient funding available to the community for them to hire their own technical advisor.
12. The Respondents describe community involvement activities that are contingent upon requests from the community. The Respondents should be proactive in communicating with the community with a Community Involvement Plan (CIP) that will specify the activities to be completed.
13. Commercial/industrial cleanup levels will require institutional controls if remediation will not result in unrestricted use and access. Any institutional controls should be fully described in the RAP.
14. All laboratory analysis results, reports, and supporting information should be provided to EPA (and TCEQ?) at the same time that this information is provided to the Respondents.
15. These comments are in addition to the provisions in the SOWs.
16. EPA and/or TCEQ may have additional comments on the work plans.